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ABSTRACT

The relationship of student locus of control (SLOC) to six achievement measures and a number of student characteristics measured in a study of student performance in a reading tutorial program was examined. Subjects were 121 elementary and junior high students, individually tutored two hours daily by high school and college students and adults. The structured tutoring materials focused on decoding and comprehension skills. Students were pre- and post-tested with the Nowicki-Strickland Locus of Control Scale for Children. Additional measures were seven dependent variables (oral reading, spelling, word recognition, auditory discrimination-2, number of tutoring books completed, and self-esteem) and several student characteristics. The relationship of SLOC to the other variables was examined. SLOC was significantly correlated with student age, grade, intelligence, self-esteem, all achievement measures, and the Self Esteem Scale (SES) internality being associated with higher SES. In the regression analyses, SLOC pretest was a significant predictor of four dependent variables. The data provide confirmation of the construct validity of the Nowicki-Strickland scale. Implications of the relationship of SLOC with self-esteem and the consistent increases in the magnitude of the correlations from pre- to post-testing are discussed. (Author)

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THE RELATIONSHIP OF STUDENT LOCUS OF CONTROL TO SELF-ESTEEM AND SIX MEASURES OF READING PERFORMANCE

by

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The Relationship of Student Locus of Control to Self-Esteem and Six Measures of Reading Performance

Various measures of the concept of locus of control of reinforcement have been shown to be predictive of students' achievement scores (for review, see Lefcourt, 1966, 1976). A frequently used measure of a generalized locus of control orientation in children is the Nowicki-Strickland Locus of Control Scale for Children (CNS-IE) (Nowicki & Strickland, 1973). The construct validity data reported by Nowicki and Strickland showed the CNS-IE scores to be significantly related to students' age and measures of achievement and not significantly related to measures of social desirability and intelligence.

In a study of student performance in a summer reading tutorial program (Willey, 1976, 1978) student locus of control (SLOC), measured with the CNS-IE, was one of the variables examined in relation to student progress. The purpose of this paper is to present the findings for the relationship of SLOC to six measures of achievement, a measure of self-esteem and a number of student characteristics also measured in the study.

Method

Program

The data reported in this paper were collected at a six-week summer tutoring program in reading operated in metropolitan Atlanta. Students were individually tutored for three 40-minute periods which were alternated with three 40-minute periods of group activities. All tutor-student pairs used the same set of tutoring materials: a sequence of books which presented word attack and comprehension skills. The materials were highly structured; many instructional behaviors were scripted, although the use of reinforcement procedures was encouraged but not scripted.

Students were 121 elementary and junior high school students. They were

all Caucasian, 90 males and 31 females. Their ages ranged from 6 to 14 ($\bar{X}$= 10.3); the range of grades completed was 1-7 ($\bar{X}$=3.8); and intelligence test scores ranged from 57 to 130 ($\bar{X}$=99). The students represented a broad range of SES backgrounds and school achievement levels in relation to their grade placements.

Tutors were 70 high school and college students and adults from the community. Eleven tutors worked parttime and tutored only one student; 59 worked fulltime and tutored two students, one younger and one older. Four tutors were male and 66 female; all were Caucasian except one Black male college student. Their ages ranged from 13 to 69 ($\bar{X}$= 28.5); they had completed from 7 to 17 years of education ($\bar{X}$=12.9) and represented diverse SES backgrounds.

Variables Measured

Dependent variables. Students were pre- and post-tested with the CNS-IE (SLOC), the Coopersmith Self-Esteem Inventory (SEI), the Gates-McKillop Oral Reading (GOR) and Spelling (GS) Tests, the Slosson Oral Reading Test (SORT), and two informal tests of auditory discrimination (BIADI and BIADII). In addition, the number of tutoring books completed (NBOOKS) was calculated for each student at the end of the program. Alternate forms were used for GOR and GS, and the same form was used for the pre- and post-tests of the other measures. The GOR, GS, and SORT were administered individually; the BIADI, BIADII, SEI, and SLOC were presented orally in small groups, the students marking their responses on answer sheets. By using oral presentation for the SEI and SLOC, the younger students and poor readers were able to respond to the items with little difficulty.

Independent variables. The student characteristics examined in the present study included sex, grade, age, SES, and IQ. Two other variables--number of parents at home and school system in which student was enrolled--are also reported here, since they were significant predictors in two of the regression analyses, although not of direct interest in the present study. All of the above information

was obtained from the students' application forms and available school records. During the first two weeks of the program, the Slosson Intelligence Test was given to any students who had not been administered an intelligence test in the preceding nine months. Parents' occupations were used to assign SES ranks according to the modified form of the Edwards scale used by the U.S. Census Bureau.

Analyses and Results

The relationship of SLOC to the other variables was examined through two types of analyses--correlations of SLOCPRE and SLOCPOS with all other variables and a series of step-wise multiple regression analyses. Data for males and females were combined since there were not enough female students in each grade to provide adequate cell-n's for separate analysis.

Correlations

The means and standard deviations for all the variables are presented in Table 1, and the correlations and p-values of the variables with SLOCPRE and SLOCPOS are presented in Table 2. As a group there was only slight change toward internality from pretest ($\bar{X}$=17.52, s.d.= 4.49) to posttest ($\bar{X}$=16.82, s.d.= 4.57); however, the moderate SLOC pre-post correlation (r=.555, p<.001) indicated uneven individual changes in scores.

As expected SLOC, both pre- and post-test, was significantly negatively correlated with student age, grade, and all of the pre- and post-tests of the achievement measures; internality was associated with higher age, grade level and achievement. All of these correlations had p-values less than .001, except for three with p-values less than .002. In addition, SLOC was significantly related to SES and to pre- and post-test measures of self-esteem (SEI), internality being associated with higher SES and higher self-esteem. SLOC was not significantly related to sex (r=.070, p=.223 for pretest; r=.026, p=.391 for posttest). The unexpected significant correlations between SLOC and IQ (p<.05) and the SEI lie score (p<.01) indicated that internality was associated with

higher intelligence and lower defensiveness.

Regression analyses

A series of step-wise multiple regression analyses was used to determine the contributions of the student-characteristic and pretest variables to each dependent variable. For each analysis the appropriate pretest measure was entered at step one and all other dependent variable posttest measures were deleted. In analyses with an academic measure posttest as the criterion variable, pretests of the remaining academic measures were also deleted. In each of the analyses with NBOOKS, SEIPOS, and SLOCPOS as the criterion variable, all pretests were free to enter, with SEIPRE and SLOCPRE entered at the first step in the latter two analyses, respectively. A significance level of .05 was used for all regression analyses.

The results of the regression analyses are presented in Table 3. For all dependent variables, the largest proportion of the variance was accounted for by the respective pretests. The contributions of other variables were small. Students' initial locus of control (SLOCPRE) was a significant predictor of four variables, accounting for slightly more than 2 % of the spelling posttest scores(GSPOS), less than 1% of the Slosson oral reading posttest scores(SORPOS), approximately 2% of the difference in number of books completed(NBOOKS) and less than 2% of the self-esteem posttest scores(SEIPOS). Only the initial self-esteem score(SEIPRE) and initial self-esteem lie score(SEILE) significantly contributed to the prediction of locus of control posttest scores(SLOCPOS), together accounting for nearly 9% of the variance.

Discussion

The significant correlations between the pre- and post-test measures of locus of control and students' age, grade, and achievement scores, and the significant contributions of initial locus of control to four achievement measures in the

regression analyses provide strong confirmation of the construct and predictive validity of the CNS-IE as a scale for measuring children's locus of control. Further, the significant correlations of SLOC with SES and self-esteem corraborate the findings of a number of other investigators who have used the CNS-IE.

However, the significant correlations of SLOC with intelligence and the self-esteem lie-defensiveness scale, although of a smaller magnitude than the above correlations, contradict the construct validity requirements set for the CNS-IE. The correlation with intelligence could not be due to sampling pecularities, since the distribution of IQ in the sample for this study was not an attenuated one, but rather represented a broad range of scores and, as the mean and standard deviation indicate, approximated a normal distribution.

The SEI lie-defensiveness scale is described by Coopersmith (1967) as giving an indication of the subject's likelihood to have distorted responses on the SEI to fit what he perceives the correct responses to be. To the extent that the lie score is valid, it may be considered similar to a measure of social-desirability influence on responses. Examination of the means and standard deviations of the lie score pretest(SEILE) and posttest(SEILO) indicate that the distribution of SEILE scores was not skewed, but that of SEILO scores was skewed slightly in the direction of low defensiveness.

Inspection of the correlations indicates that the strength of the relationship between SLOC and intelligence decreased from pre- to post-testing, while that between SLOC and degree of defensiveness increased. These relationships are puzzling and an explanation for them is not readily apparent; although, it is possible that, if the SEI lie-defensiveness score is a measure of defensiveness in the sense of being rigid and closed to change, then the relationship between internality and low defensiveness might be an indication of the malleability of locus of control and related self-esteem. This possibility is supported by the fact that SEILE was a significant predictor of SLOCPOS.

Since sex differences are usually found in locus of control data, it should be noted that the significance levels of the correlations of locus of control with the student characteristic variables were consistently high when the male and female data were combined. If SLOC sex differences do exist in this sample, separate analysis would tend to increase the magnitude of the correlations for male subjects after the usually less consistent relationships for female subjects are removed. It is difficult to determine what the female data would look like in this case for this sample. However, the nonsignificant correlations between sex and initial and final locus of control suggest that the female data in this sample would correspond to the male data. Finally, it would seem that, while there may be sex differences in the predictive validity of a locus of control instrument, there should not be sex differences in the construct validity of an instrument intended for use with both sexes.

An inspection of the four correlations between SLOC and each of the achievement measures (e.g., GORPRE-SLOCPRE, GORPOS-SLOCPRE, GORPRE-SLOCPOS, GORPOS-SLOCPOS) reveals that the strength of the relationship between SLOC and the achievement measures increased from pre- to post-testing (e.g., GORPRE-SLOCPRE= -.28; GORPOS-SLOCPOS= -.34) for all but the second auditory discrimination test, and that more change occurred in the achievement scores than in the SLOC scores for spelling (e.g., GSPRE-SLOCPRE = -.259; GSPOS-SLOCPRE= -.371; GSPRE-SLOCPOS= -.301) and the second test of auditory discrimination, but the opposite occurred for oral word recognition (SOR) and the first test of auditory discrimination (BIADI). For oral reading (GOR) the amount of change in achievement and SLOC was the same.

The pattern of the four correlations between SLOC and self-esteem shows that the strength of the relationship nearly doubled by the end of the program (SLOCPRE-SEIPRE= -.261; SLOCPOS-SEIPOS= -.490) with more of the change occurring in the self-esteem scores than in the SLOC scores. The reciprocity of the relationship between SLOC and self-esteem is indicated by the fact that the pretest of each

was a significant predictor of the posttest of the other.

It is interesting to note that such reciprocity does not exist betweer locus of control and the achievement measures. Although SLOC was a significant predictor of four of the six achievement measures, none of the achievement measures was a significant predictor of SLOC. These relationships may suggest that locus of control functions as an intervening variable in a tutoring situation, the degree of internality that an individual brings to the tutoring situation affecting the amount of change in achievement and self-esteem during tutoring, while itself being affected by the individual's initial level of self-esteem and degree of defensiveness. This possibility is an interesting one which needs further investigation.

Table 1. Means and Standard Deviations of Dependent and Independent Variables

Variable	Mean	Standard Deviation
Dependent		
GORPRE	3.57	1.56
GORPOS	4.23	1.52
GSPRE	3.36	1.27
GSPOS	3.62	1.29
SORPRE	3.52	2.12
SORPOS	3.91	2.24
NBOOKS	3.12	1.91
BIADIPRE	42.11	9.28
BIADIPOS	48.68	4.20
BIADIIPRE	55.55	24.45
BIADIIPOS	70.69	25.90
SEIPRE	27.17	6.16
SEIPOS	28.93	7.56
SEILE	4.55	1.84
SEILO	5.17	1.89
SLOCPRE	17.52	4.49
SLOCPOS	16.82	4.57
Independent		
SEX	1.74	.44
AGE	10.26	1.82
SCHOOL	1.80	1.29
GRADE	3.86	1.78
PARENT	1.93	.25
SES	3.00	1.73
IQ	99.26	14.74

Table 2. Correlations of SLOCPRE AND SLOCPOS With All Other Variables

	SLOCPRE		SLOCPOS	
Variable	r	p	r	p
GORPRE	-.207	.001	-.303	.001
GORPOS	-.307	.001	-.338	.001
GSPRE	-.259	.002	-.301	.001
GSPOS	-.371	.001	-.426	.001
SORPRE	-.316	.001	-.378	.001
SORPOS	-.362	.001	-.372	.001
NBOOKS	-.330	.001	-.254	.002
BIADIPRE	-.255	.002	-.314	.001
BIADIPOS	-.268	.001	-.278	.001
BIADIIPRE	-.387	.001	-.337	.001
BIADIIPOS	-.297	.001	-.308	.001
SEIPRE	-.261	.002	-.343	.001
SEIPOS	-.366	.001	-.490	.001
SEILE	-.221	.007	-.334	.001
SEILO	-.240	.004	-.310	.001
SLOCPRE	--	--	-.555	.001
SEX	.070	.223	.026	.391
AGE	-.344	.001	-.324	.001
SCHOOL	-.176	.026	-.112	.110
GRADE	-.334	.001	-.320	.001
PARENT	-.066	.237	-.033	.361
SES	.357	.001	.297	.001
IQ	-.209	.011	-.188	.019

Table 3. Multiple Regression Analyses

Step and Independent Variable	Multiple R	R^2	Increase in R^2	Beta	F
	Dependent Variable:	GORPOS			
1. GORPRE	0.9215	0.8491	0.8491	0.7324	669.709
2. GRADE	0.9341	0.8726	0.0235	0.2341	21.732
3. PARENT	0.9393	0.8822	0.0097	0.1055	9.596
4. SCHOOL	0.9436	0.8903	0.0081	0.0925	8.544
	Dependent Variable:	GSPOS			
1. GSPRE	0.8790	0.7727	0.7727	0.7671	404.458
2. SLOCPRE	0.8916	0.7949	0.0222	-0.1285	12.795
3. GRADE	0.8977	0.8058	0.0109	0.1330	6.560
	Dependent Variable:	SORPOS			
1. SORPRE	0.9640	0.9292	0.9292	0.9441	1562.751
2. SLOCPRE	0.9658	0.9238	0.0035	-0.0628	6.229
	Dependent Variable:	NBOOKS			
1. SORPRE	0.5823	0.3391	0.3391	0.5311	61.065
2. SLOCPRE	0.6023	0.3627	0.0236	-0.1619	4.366
	Dependent Variable:	BIADIPOS			
1. BIADIPRE	0.6246	0.3901	0.3901	0.5741	76.124
2. IQ	0.6490	0.4212	0.0311	0.1834	6.335
	Dependent Variable:	BIADIIPOS			
1. BIADIIPRE	0.8988	0.8078	0.8078	0.8988	500.220
	Dependent Variable:	SEIPOS			
1. SEIPRE	0.5853	0.3426	0.3426	0.5499	62.004
2. SORPRE	0.6357	0.4041	0.0616	0.1857	12.195
3. SCHOOL	0.6552	0.4293	0.0252	0.1466	5.163
4. PARENT	0.6713	0.4507	0.0213	-0.1467	4.507
5. SLOCPRE	0.6849	0.4691	0.0184	-0.1478	3.993
	Dependent Variable:	SLOCPOS			
1. SLOCPRE	0.5549	0.3079	0.3079	0.4518	52.931
2. SEILE	0.5957	0.3548	0.0470	-0.2188	8.587
3. SEIPRE	0.6291	0.3957	0.0409	-0.2095	7.917

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